

Jennifer Stock:

Welcome. This is Jennifer Stock. I'm your host for Ocean Currents and on this show we dive into the depths of the big, blue sea and our blue planet talking about different explorations, expeditions, science, research, and ways that we can get involved in better protecting our oceans and we host this show one Thursday a month, every fourth Thursday 5:30 to 6:30 and it's rebroadcast the following Monday at 1 o'clock PM.

So, have you ever been walking on the beach and discovered a marine mammal dead on the beach, but curiously missing its head? Have you wondered why the head every single time? Well, today's show will help solve that mystery for you. Later in the last quarter of the show, I'll be talking with a bird biologist, Michelle Hester of Oikonos Ecosystem Knowledge and this is a group that has just recently started a black-footed albatross tagging project and we're going to hear all about what's happening with these birds that were just tagged at the Cordell Bank Sanctuary a few weeks ago. So, stay tuned for the last quarter of the show for that, but tonight, I'd like to welcome the coordinator for the multimedia studies program at City College and a filmmaker, Beth Cataldo and also Ray "Bones" Bandar, a skull collector.

Beth recently produced a film called "A Life with Skulls" that debuted at the San Francisco Ocean Film Festival this year and Ray...well, Ray has been walking the beaches for years and collecting skulls for 50 years and has many, many stories to share. So, Beth, let's start with you. How did you first meet Ray? You're a filmmaker and Ray's on the beach with skulls. How did you meet?

Beth Cataldo:

That's a good question. I started volunteering at the Marine Mammal Center in Sausalito early in 2000 and in 2003 we got a message that there was a backstage tour at the skull exhibit over at the Academy of Sciences and I didn't know...I'd been to the skull exhibit and I thought, "What would a backstage tour be?" So, I signed up, you know, it was free or twenty dollars or something and went back there and we met Ray and so this man took us and it was about a five hour, six hour tour and he went and told us all about these skulls and if you've ever seen Ray talk about his skulls, he's very enthusiastic. He has these great stories, they are travel stories, there are tragic stories about how he's walking through water and almost drowns, and as a filmmaker, I thought, "I've got to film this man."

It was the last exhibit before the Academy closed down for renovations and it just inspired me to make this movie about this man.

Jennifer Stock: Wonderful. So, had you been walking on the beaches too and did you see animals and wonder what was this all about?

Beth Cataldo: It was. That was...when I started at the Marine Mammal Center it inspired me to go the beaches and look for, you know, sick marine mammals and on Ocean Beach, I had seen a lot of animals without their heads, sand stuck into where there skulls were, and I couldn't figure out if there was something wrong with their skulls or maybe they had decomposed more quickly than the rest of their bodies and when I went to this backstage tour, it became clear, that "Eureka" moment. "Ah! This is the man who's been taking their heads."

So, that was another thing that I learned on that tour, yeah.

Jennifer Stock: Excellent. Do you produce other films too or was this a major undertaking for yourself?

Beth Cataldo: You know, I'd made lot of short movies. I've done a lot of, like, PSAs. I've done some work for the Marine Mammal Center, but I've never done a full-length half hour movie and finished it. I've started a lot, but this one I forced myself to finish. So, yeah, this was a big undertaking.

Jennifer Stock: Wonderful. So, Ray, when did you first begin collecting skulls? What's the story behind that?

Ray Bandar: Well, in 1953 at Ocean Beach, I used to hang out at Kelly's Cover there and do body surfing. I wasn't very good, but I still did my body surfing there...no fins, no suits, you know, and this decomposed harbor seal was washed up on the beach there and I don't know what got into me, but I went home, came back with a knife and cut off its head and my parents were at work that day and I don't know how to prepare them. So, I just got a big pot in the kitchen there and turned up...filled it full of water and put the skull in there and boiled it to get the flesh off and did it stink up the house. Well, fortunately the house was just off Sloat Boulevard and so I opened up the front door, opened up the rear door so the oceanic breeze would kind of blow through the house, but when my folks came home about 6:30 or 7 o'clock that evening, the house still stunk and I never...I did get the flesh off and that skull is

an important one. It's an adult harbor seal and why it's important is the teeth were worn flat to the gum-line.

Jennifer Stock: What does that mean?

Ray Bandar: Well, I guess it was doing maybe a lot of bottom feeding and ingesting maybe some same and gravel or maybe feeding on shellfish and so, in the skull exhibit, I had it there, compared with the normal dentation of harbor seals, whose teeth are serrated. So, it made a nice comparison.

Jennifer Stock: Oh, so it's kind of an educational tool as well.

Ray Bandar: Absolutely.

Jennifer Stock: Now you were a teacher for a while too.

Ray Bandar: 32 years....

Jennifer Stock: 32 years.

Ray Bandar: ...and my classroom was a museum. The administration used to run tours through my classroom. I had it full of live stuff and all kinds of skulls and pelvises and vertebrae hanging from the walls and on the shelves and stuff and I taught human anatomy and physiology and if I got a fresh animal on the beach, whether a dolphin, a porpoise, or a sea lion, I would cut the head off cleanly below the throat area and I would dissect it in the classroom so the students could see the larynx and the trachea and all the stuff. In the meantime, I would also have a cleaned up skull of the same species to compare it and so my classroom was pretty neat.

Jennifer Stock: Your students must have eaten that up

Ray Bandar: Yeah and I had two freezers in the back, I finally got the city to pay for them, four-foot freezers full of monkeys and apes I'd get from the local zoos and so my students, my seniors, in the anatomy and physiology class reveled to dissect monkeys and apes. The greatest one was a full-sized chimpanzee the size of a human and even the medical school, they didn't get what they got in my classroom because these bodies that were being dissected had their natural colors and natural aromas. They were embalmed.

Jennifer Stock: That's amazing. That is so precious and hard to hear of other educators that had the same resources as you brought. What

happened to all of your skulls in your classroom? I take it these are still in your collection.

Ray Bandar: Well, some of that I retired. My wife took off on one of her long trips. She...so, I brought all the stuff home. It took a while. I had live scorpions and tarantulas, and snakes too to add to the stuff that I had at home, but the bones...and so I brought them all home and I had this one big set of moose antlers from a bull moose and I had no room to hang up on the walls. So, I stuck it in the bathtub and when my wife finally came home from her trip and wanted to take a bath, I had to lift up out of the bathtub each time, but after a few years of doing this I said, "Nuts! I'm not going to take it out of the bathtub anymore and you can just use the shower," and so it sits in the bathtub, but there's also a caribou rack right above it for a towel rack, which was ok, but if I stood up in the bathtub that was too low. I'd hit my head on it.

So, we can't take baths in the house anymore, just showers.

Jennifer Stock: I can imagine. So, there is a second equation here, alchemy is your wife and she was an artist, she is an artist.

Ray Bandar: Yeah.

Jennifer Stock: So, part of this is an artistic search as well, right? You were enjoying or exploring the different shapes of skulls together and you guys traveled all over together. What were some of your earlier travels and skull collecting stories?

Ray Bandar: It wasn't just skulls, but the pelvises and vertebrae too are very sculptural. In fact, I really get hooked on some of their pelvises because they're so neat, the shapes. Well, the honeymoon trip, which was 11 weeks of camping. We covered 11,000 miles in her little Ford, yellow Ford convertible with a black top. It was a 1946 Ford and the honeymoon was in 1954 and so we took off camping across the United States and Canada, camped in Montreal, Quebec and in art school we met. I was hooked on bones and we drew skeletons and bones and studied human anatomy, but Henry Moore and Georgia O'Keefe were really inspirational, but I think one of the key things was when I got to the Natural History Museum in New York, they had these great dioramas, but they also had displays of full skeletal mounts and when I saw the full skeletons of bison, of a giraffe, or a 20-foot python, I said, "Wow!"

Those skeletons really blew my mind and coming back from the honeymoon trip when we were driving across Colorado and my

wife says, "Hey! I see some...looks like a skeleton out in the field."
So, I pulled over, hopped the fence...full skeleton of a horse....

Jennifer Stock: Wow.

Ray Bandar: ...and as we went down into Utah, I found skeletons of a winter-kill sheep and then more stuff in Arizona and by the time I got back to San Francisco, the back of the Ford was piled high with bones with the camping stuff on top of it. We had taken out the backseat to have room for the camping stuff, but now it was packed full of bones.

Jennifer Stock: Wow. So, you got hooked up with the Cal Academy after you retired from teaching and what did you do for the Cal Academy?

Ray Bandar: No, I actually got hired at the Cal Academy before I started teaching in 1956 and then when I got my teaching credential, I resigned from a paid position and the director didn't want me to leave so they told me to stay on as a field associate and in '59, they sent me on an expedition to Mexico and then more expeditions to Baja, California. '64 and '65...or '65 down to the Cloud Forests of Oaxaca in '64. So, they sent me on a number of expeditions and I collected for the Department of Entomology. I collected insects, I collected reptiles, but mainly I was mammology, collecting mammals.

Jennifer Stock: So, just to bring folks in, talking with Ray "Bones" Bandar, a skull collector and Beth Cataldo, who has recently documented Ray's skull collecting fetish and life and we're going to talk about the film a little bit towards the end, but about the Cal Academy, what did they use some of the skulls for and some of the information you were...what are they using the information for?

Ray Bandar: Well, it goes into the research collection and the skulls that I collect has all the data. So, the species, the sex, the age, and some measurements, and the gum of it...especially interested in causes of death and so especially if I can document human-related causes of death and there are many, I can give many stories about human-related causes of death of marine mammals and...

Jennifer Stock: Let's hear a couple of those stories.

Ray Bandar: Well, sometimes when I remove the flesh from the skull, I'll find bullet holes and once the skulls are cleaned up, like in the skull exhibit, I had a whole series of skulls that show bullet holes, entry and exit and also those that were shot with shotguns. So, the skull

is peppered with tiny punctures and often the pellets from a shotgun are still embedded in the bone. So, that's one cause, but also boat and ship collisions and so, from San Francisco Bay, a harbor seal that had propeller slashes across the hind and the rear flippers. Another harbor seal that I picked up at Fort Point by the Golden Gate Bridge, I brought the whole carcass back to the Academy because it was real fresh and as I fleshed it out and opened it up, I found the ribs on one side were crushed and the abdominal and thoracic cavities were full of blood.

So, it had had a boat collision of one side and I worked on a humpback whale, a big 40 foot humpback whale, down by Pescadero and while the vets were working on it I was cutting out several other bones and then when they finished, I started flushing out the skull and one side of the skull was smashed and she also had a full term fetus in her, but...So, she had a boat collision that hit the skull and crushed half the skull on one side.

Jennifer Stock:

I suppose at the time that you're getting an animal and examining it, what information could be...I mean, there's probably a very legal authority they could deal with prosecuting anybody at that point once you have the animal. Has there ever been any cases where there might have been some prosecution as a result of your investigations?

Ray Bandar:

No. The fish and game wardens that want me to collect any bullets that are still embedded in the skull to save them and see if they can match up because several years ago I recovered several sea lions that were shot by the Hyde Street Pier and Pier 39. So, I was able to salvage the bullets and I gave it to the fish and game guy there to keep. They had a suspect, but none that I recall. What was interesting is in the late 70's and early 80's I was walking the beaches north of Pacifica, Thornton Beach, Fort Funston Beach, Ocean Beach, I was seeing these piles of diving sea birds washed up on the beach and also, porpoises, harbor porpoises were being washed up and the harbor porpoises had their fins and their tails cut off and their fins cut off and there were net marks on some of them and this continued over the next several years and eventually, five years later, they had a meeting at the Marin County Civic Center there with Fish and Game and National Marine Fisheries and so, I testified along with others regarding finding all these marine mammals.

So, I got seals and sea lions also that had drowned in nets and so they finally passed some ordinances where they couldn't four-inch gillnets. They had to change the eight inch gillnets and they

couldn't gillnet close to shore. That would be off the Farallones, between the Farallones and Ana Nuevo. There were restrictions, but that took about five years.

Jennifer Stock: Wow. A lot of animals perished through that time.

Ray Bandar: Lots of them.

Jennifer Stock: So, are those skulls in your collection?

Ray Bandar: The skulls are at the California Academy of Sciences and also in my collection because once the Academy is rebuilt then we have more space because they were running out of space as I was collecting all these marine mammals. So, I was collecting, actually, it was several thousand and the rare ones I get and the big ones are housed at the Academy. All the sea otters go there, the rare beaked whales, and the large...some of the skulls are 2 to 5 feet long and so they end up at the Academy and they find room to house it, but they have a space problem.

Jennifer Stock: Yeah, and the space problem has moved to your house and Beth, you got a nice tour of Ray's house during the filming, didn't you?

Beth Cataldo: Yes. It's skull-palace, yes.

Jennifer Stock: What was the skull-palace like?

Beth Cataldo: Well, it's a room that is, I guess you can use the word crammed, with thousands of skulls. I think Ray has told me he has over 7,000 skulls and I think a good number of those skulls are in this room that is downstairs in his house that he has carved out. He has created shelves above your head. I don't want to describe it too much because it's...there's a good scene in the end of the movie that everyone kind of drops their jaws and most people say they're glad I saved it for the end of the movie because otherwise they would have thought he might be kind of a nut if I had started the movie with it because there's so many skulls.

Jennifer Stock: That's neat. So, what are some of...are there skulls you have...the skulls exhibit was amazing and I just...I was...it took forever to go through because it was so hard to go through quickly. You had to stop and read everything, but give me some other skulls that are a part of your collection.

Ray Bandar: Well, there's elephants, and hippos, and rhinos...

Jennifer Stock: Yeah, how did you get those back to California or are those from the zoo?

Ray Bandar: Those are zoo animals.

Jennifer Stock: Ohhhhhh.

Ray Bandar: Zoo animals and what was interesting, they had...when I was teaching full time I couldn't get there all the time. So, they had an elephant skull, a dead one, they sent it to Tallow Works, but when I got done at Tallow Works they said, "Well, it broke up our machinery trying to crush it," and so on and in the meantime when I was at the Tallow Works, I saw these fifty gallon drums packed full of dead dogs and cats, jumping with fleas and crawling with maggots and I said, "Hey, how about these? Where'd they come from?"

So, they were euthanized from the Humane Societies or wherever and picked up by road kill and I said, I talked to the foreman there, I said, "You know, I teach biology and these would be great if I can get a nice collection of different breeds of dog skulls," and so, he let me come in on the weekends and I go through those barrels...

Jennifer Stock: I don't think I want to hear any more about this, I have a dog!

Ray Bandar: I got these heads and so, I eventually built up a collection of 30 breeds of dogs...

Jennifer Stock: Wow.

Ray Bandar: ...and it made it great for teaching evolution, man-made evolution by selective breeding.

Jennifer Stock: That's interesting. Wow, I didn't know that one. That's a new story. So, Ray, how about collecting here in West Marin beaches? I've run into you a couple times and you told me some incredible stories of getting lost in the dark and having to sleep in poison oak and what are some West Marin Beach stories?

Ray Bandar: Well, when I remove the heads from pinnipeds, seals, and sea lions, I don't just cut off the head. I have to just cut off the head for dolphins and porpoises, but the seals and sea lions, I skin them back. I make a couple of slits in the mouth, in the jaws, and I skin them back so when I get the skull removed, the whole head is still there, the skin with the eye holes, the muzzle, the whiskers, and so on and sometimes I just lay it out there and pile some sand in there

so when people are walking by, they don't know it's minus its head. So, it's not a real gross thing, but I...years ago, I...before Point Reyes had come on down towards Bolinas, I used to hike from ?? Beach and it was a tough hike, go up the Double Point, which is a big harbor seal haul-out and then from Double Point, I had to wade through a tide pool. I could do this in a minus one foot tide and still, I was walking ankle-deep in this tide pool to Wildcat Beach and when I went out there I found this rare beaked whale, a fifteen foot adult female bears' beaked whale, Mesoplodont.

And so I stayed there and I cut off the head, it was pretty difficult, and removed as much flesh as I could. So, I wanted to haul it back. By the time I finished hours later, the tide had come in. Now, I had a sack with all my gear and I'd carried it over my shoulder and I go 100 yards or so, drop it off, walk back and get the skull and carry it back. I put it in a huge sack. The skull was probably about, at least 30 inches long and when I finally got it back home and weighed it, it weighed over 50 pounds even though I'd taken off most of the meat.

Well, wading through that little tide pool, it was now chest deep, and I'd taken off my boots and I had a pair of tennis shoes to wade through tide pools and then when I got to Double Point, I decided I had to bury the skull, it was too heavy to carry going back and forth and the tide was in. It was dusk now and just after going south from Double Point, the water came up to the cliffs there and there were some sea caves.

So, I try to make a dash between the wave pulling out and the sea caves and a wave caught me and dragged me into the sea cave, filled it up, and I'm up and down, upside down in the water there. Of course, it had ruined my binoculars, my boots, and stuff and I finally made it back soaked. My wife was really worried. There was a ranger there with her because it was dark by now and because they were going to send out, maybe, a search party for me because the tide had come in and so, that was my hairiest story at Point Reyes and then another time, this is just recently, about three years ago or so, it was in the late spring or...no, early spring because it got dark early and I was at Abbot's Lagoon and about mile south was a California sea lion that was reported.

So, I removed its head, took off as much flesh as I could and I'm walking back, it started raining and by now it was dusk. By the time I got to Abbot's Lagoon it was total darkness and raining and I walked around the lagoon there, found a wooden bridge and I couldn't find a trail back up to get back to the parking lot and I kept

wandering around back and forth and into the bushes and I didn't want to fall into the lake. So, I just curled up, I walked up to the right away from the vegetation as much as I could, just curled up in the rain there, and fortunately, my wife was out of town and so I stayed there overnight while it rained down on me for this California sea lion skull and at dawn, I finally walked back, found it...see, the trail is overgrown because it was after the wintertime, it was early spring, and the vegetation was everywhere.

Jennifer Stock: Wow. That's...and how many years ago was that one?

Ray Bandar: That was just...well, it was the year 2000.

Jennifer Stock: Wow. Wow. How about your wife? How does she feel about all of this skull collecting?

Ray Bandar: Well, in the beginning it was pretty cool. She liked the bones. They're very artistic, very sculptural, and several years ago Wayne Friedman from Channel 7 News came over and he did a photographic tour of the house, the three levels, and then they photographed in the bathroom and there's the big moose antlers sitting in the bathtub and so, before he left he asked her, he says, "How do you put up with all of this," and she looked at him straight in the eye there and she says without hesitation, "I take frequent vacations." There was a pause. "Long ones." And that's how she put up with it.

Jennifer Stock: I have to say, she has a very special role in the film featured as well. I think you did a nice job with that, Beth.

Beth Cataldo: Yeah. She is quite a character. She's very charismatic and she gives a lot of insight into Ray also. So, yeah. She plays a good role in that film.

Jennifer Stock: That's...I should ask how your neighbors feel.

Ray Bandar: Well...

Beth Cataldo: They don't know.

Ray Bandar: See, we lived on Haight-Asbury for ten years and the apartment, it was a great apartment. It had a view of the Golden Gate Bridge, one side, from the bathroom window, I could see the Bay Bridge, downtown, market street, and so on and every room in the house got...I filled it up as the years went by with more and more skulls. Also, I had lots of animals there. I had eight turtles and tortoises. I

had thirty snakes, a bunch...over twenty of them were rattlesnakes....I used to raise rattlesnakes, scorpions and tarantulas and the bones and so, finally Alkmene said, "I can't set up my easel anymore to do any drawing or painting. I've had it. We're buying a house."

And so, we got a real estate guy and said we needed a house with a big room down and he kept showing me these places all over the city, we said the western part of the city we wanted to live and he showed us these big rooms that's too small, not enough room. "Well, how much room do you need?"

I said, "Why don't you come up to the apartment and take a look." And he did and he saw all the stuff there. Okay and so we found this place and so, under cover of darkness during Christmas vacation, I had two weeks teaching. So, under cover of darkness I went down the three flights of stairs carrying the skulls and all the terrariums and aquariums with all the animals and stuff. So, for two weeks and my VW van had a big rack and I filled up the rack up on top with big moose and caribou antlers and horns and so on. As I drove up Twin Peaks, cars would drive up past me and they'd slam on the brakes and their heads would peer out the window and look at this silhouette of this van with all of these horns and antlers sticking out of the top.

So, under cover of darkness for two weeks I snuck all the stuff into the house...the terrariums with the snakes and the turtles and tortoises and all the skulls.

Jennifer Stock: Wonderful and they still don't know.

Ray Bandar: Well, some of them...we've got some cool neighbors next door that moved in. So, they've had a tour of the place and the one guy's an artist and the other guy collects antique radio and phonograph stuff like this and so on.

Jennifer Stock: Neat. Well, we're going to take a short break in just a little bit and when we come back, I want to hear a little bit about the whole process of once you get to the skull and, you know, the cutting of it off the head, but there's a whole process of removing all that stuff off of the skull and I want to hear a little bit about that.

(Music)

Jennifer Stock: This is Ocean Currents and what happens with all the flesh on these skulls? How do you get that stuff off of there?

Ray Bandar:

Well, depending upon what beach I'm on, if there's not a lot of people there...not a high-profile beach like China Beach in San Francisco, I'll stay as long as I can depending on daylight and stuff like this. With my scalpel, I'll remove as much flesh as I can and this makes the ravens and seagulls very happy because they come by and pick up the bits of meat and eventually I have to leave. I scoop out the brains. The brains are the smelliest part, especially if it's not a fresh dead marine mammal and I try to remove the brains to get all of that smelly stuff out there on the beach, which the gulls and ravens don't mind, and I take it back to the lab, of course, I don't have a lab now. I'm working on stuff at home because the Academy has been torn down. They're rebuilding it.

So, in the lab, I'll remove more flesh and depending on the species, if it's the dolphins or porpoises or very young seals and sea lions pups or yearlings, I remove as much flesh as I can, dry it out, the flesh, semi-dry it, and put it into the dermestid beetle colony and the beetle larvae feed on the dry flesh. They do a pretty darn good job of it. The adults, they just have sex and fly around, but it's the larvae that feed on the dried flesh.

Jennifer Stock:

How long does that take?

Ray Bandar:

It depends on the size of the skull. It may take as long as a week or two weeks or a little bit less if it's a smaller skull like rodent skulls and so on, but the way I do most of my seals and sea lions and the other land mammals if they're not real small ones, I remove as much flesh as I can, put it into a container of water, cover it up, just plain tap water, and put it in a warm place by the heater. The temperature is probably in the 80's and bacterial action, bacterial maceration, removes all the organic material. Though, I can't do this with dolphins and porpoises because the teeth fall out and then you can't replace them with accuracy whereas the seals and sea lions and bears and lions, I can replace the teeth when they fall out into their proper sockets.

So, that's a way. Since I don't have the bug colony now and I'm preparing stuff at home, I have a deck that sits out back of the house and the neighbors don't get the smell and the maggots. So, the flies are coming around and they lay their eggs and the maggots are cleaning up some of my skulls and they're doing a pretty good job of it, but the odor is horrendous, but it doesn't bother me and Alkmene says she's lost her sense of smell and the neighbors don't get the smell and the flies basically don't come into the house. So, that's how I'm cleaning the stuff up.

Jennifer Stock: So, through death there's life for others with all the little organisms that are munching on them. So, when you've seen so many different animals and probably have investigated different causes of death, what have been some of the unusual causes of death that you've identified through your investigations.

Ray Bandar: Well, I had mentioned the boat and ship collisions. I also want to mention that over the years I've examined nine leatherback sea turtles here in the bay area. Three actually in San Francisco.

Jennifer Stock: In San Francisco Bay?

Ray Bandar: No, one by the Cliff House...Cliff House Beach, Sutro Baths Beach and two by Fort Funston Beach by the hang-glided areas and one up in Point Reyes at RCA Beach and of the nine leatherback sea turtles, four of them had propeller slashes to their carapaces, which obviously killed them because we frequently see them floating at the surface off the Farallones just basking in the sun in the summer and fall months, but some of the unusual causes...I've gotten three harbor seals over the years that choked on fish, large midshipmen fish stuck in its throat and, in fact, one of them was an adult female who had a fetus in her and Bob Orr, my former boss at the Academy of Sciences, in fact, he wrote a paper about a harbor seal choking on a fish, a scientific paper back in the 50's I think, or 60's and of course one of the most unusual, which happened in 2003, we had a rogue elephant seal bull at Double Point at Point Reyes attacking and trying to copulate with female harbor seals, which is one of the largest harbor seal haul-out rookeries and he was observed to have killed at least 45 female harbor seals.

He actually killed more because many of them had fetuses and others had nursing pups which died of starvation and I recovered about eight skulls that had puncture holes in them from his teeth that washed up on nearby beaches on Point Reyes north and south of Double Point and of course, this last year we had a rogue elephant seal at Jenner up the Russian River and he's been coming here for the last five years trying to copulate with female harbor seals and as he mounts them, he bites them on the rear end and he mounts them, crushes them, he bites the skull, which is a normal process when he's copulating with female elephant seals, and of course, he kills them all and so, he's been doing this for five years and so, those are some of the unusual causes of death.

Jennifer Stock: Interesting. Have you seen any marine debris caused death?

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- Ray Bandar:* Other than nets, a number of the animals all wrapped up in fish nets floating and ghost nets, I guess they're called. So, I've seen dolphins and porpoises and sea lions and harbor seals that were all entangled in nets and one young, a yearling, California sea lion, he crawled up on a cliffside at Bodega Bay and just died there of starvation and others...and of course, the Marine Mammal Center gets a lot of live ones that are wrapped up in these drift nets and they're able to usually nurse them back, cut the nets, but that's...the marine debris that's killing a lot of marine mammals.
- Jennifer Stock:* Unbelievable. Beth, I'm jealous. You've had so much time to spend with Ray to hear these stories and you're probably hearing some new ones still to this day.
- Beth Cataldo:* Yeah. I hadn't heard about the harbor seals choking on fish, but he showed me some very interesting skulls too. There was one, I think the sea otter, that had the shark tooth in it.
- Jennifer Stock:* Tell us about that one.
- Ray Bandar:* Well, most of the sea otters I get have been shark-bit, not all of them. Of course, sharks don't like them because they have all of this fur and no meat, no blubber. They like harbor seals and this one has part of a white shark tooth embedded at the base of the cranium and I have in my collection, I have a scapula and some bones with shark teeth serrations, cuts and also the skull and in one of the shoulder blades the tip of a white shark tooth and serrations. It's still stuck in the shoulder blade bone there.
- Jennifer Stock:* That is so amazing. Amazing. This just...the stories are so educational. I think they really give us a lot of pictures of what the ocean is like, predation, natural predation, natural causes of death, also the human causes of death and I think Ray showed us definitely in the abundance of the sea lion skulls on the wall at the skulls exhibit just how many things die. Some of it's natural, some of it's not, and it's beautiful what you've done, Ray, with your skulls and I'd like to just mention to folks, if you'd like to see this film, "A Life with Skulls," Beth and Ray are going to be out here again August 10th. We're hosting the showing of the film on August tenth at the red bard classroom at Point Reyes National Seashore and that is a Friday. It will be at 7pm, 7 to 8:30 and Ray and Beth will both be here to answer questions, we'll watch the film, and Beth, this is a film available for sale as well.
- Beth Cataldo:* Yeah and the film has been edited down to about a half hour, but there was a lot more footage. So, I've created a DVD with a lot of

extras on it, some footage of Ray's house, and some old photos, some great old photos of Ray throughout the years with various animals. Yeah, and if anyone's interested they can either go to my website, which is hummingbirdmultimedia.com or email me bcataldo@ccss.edu. So, that's City College of San Francisco dot edu.

Jennifer Stock: And how do you spell your last name so that's b-c...

Beth Cataldo: C-AT-A-L-D-O.

Jennifer Stock: Wonderful. That's fantastic.

Beth Cataldo: Thank you.

Jennifer Stock: Well, just for last words here since Ray, you've been on the beaches for years and seen so many things and Beth, you've had some chances through the Marine Mammal Center and through filming this, do you have any last thoughts for listeners about their role in protecting the ocean after all of the things you've seen and done?

Ray Bandar: Well, in the late 70's and early 80's I'd take a trip up to Humboldt and Del Norte county looking for dead marine mammals, especially steller sea lions and one day when I came out to the beach, these two old fishermen, old guys were coming back and I said, "Hey! Any dead seals or sea lions up there?" And these are quotes and they said, "No," and he said, "Shoot 'em all," and I said, "Gee. How come?"

"What good are they? What do they do for the country? All they do is eat our fish. They should shoot 'em all." And that was the mentality of those guys. In the meantime I had some sea lion petitions in my back pocket. So, I evilly said, "Hey, how about sea otters?" "Same thing. What good are they? What do the otters do for the country? All you can do is look at 'em. Besides, they eat our abalone and eat our clams and our crabs." They should shoot them all. And I felt like saying to these guys, but I didn't, "Well, since you old guys have retired, what good are you? What are you doing for the county?" But, I didn't. I just went on my way.

So, that was the mentality of some of the people who are on the beach and up in Humboldt and Del Norte county then. They would drive the beach in four wheel drives and they purposely ran over a harbor seal carcass and I'd find seals and sea lions with their faces sawed off. They had chainsaws. They'd get souvenir teeth and the

game warden told me, he said, "Hey, we also find bears with their faces and paws sawed off for souvenir teeth and claws." And it's illegal. He said, "Check out these souvenir shops up and down the coast," and let them know if I see any teeth or claws from bears or seals.

Jennifer Stock: Interesting. So, it sounds like there's lots of good people can do if they have an attitude shift in conserving the things that we're trying to protect. How about you, Beth?

Beth Cataldo: For me, I think after spending some time with Ray and just looking at how complex all of this web of life is is that we should realize we are a part of it. So, what we eat, what we put in our garbage, what we throw on the beach....we shouldn't throw on the beach, effects all of us. So, I would say, eat local fish, know, you know, what you're doing, don't, you know, put chemicals in the water and be aware that we're a part of this larger web.

Jennifer Stock: Thank you. That's great. Well, I hope folks will join us on August 10th to meet Ray and Beth. The film is wonderful. I can't recommend it enough. It's got so much humor and great features of marine science and Ray and his unique attitude in regards to collecting skulls and saving them and investigating them and the adventures he's willing to take. So, please come on out August 10th to watch "A Life with Skulls," a great Friday evening activity to do. Thanks so much for joining me today in the studio, both of you. It's great coming all the way from San Francisco to Point Reyes. It's a real treat to have you here.

Beth Cataldo: It's a beautiful day here. It's nice and foggy in San Francisco.

Jennifer Stock: Ooooo. So, I wanted to mention also, Ray, this is the first time I've had you in a closed room that I'm not choking. You must not have cleaned any animals recently.

Ray Bandar: I am purposely made it a point since I'll be driving the car, Beth is driving me, that I wouldn't be working on any rotten stuff last night, but a couple of nights ago...yeah.

Jennifer Stock: The turkey vultures follow Ray.

Ray Bandar: When I get off the beach and I have to go to the supermarket and buy stuff I've noticed in the past that people would get behind me in line and suddenly people are moving away from me.

Jennifer Stock: Oh boy. Well, thanks again for joining us. We're going to take a short break and when we come back, we'll be talking with Michelle Hester from Oikonos Ecosystem Knowledge about the black-footed albatross tagging project. Stay tuned. You're listening to Ocean Currents on KWMR.

(Music)

Jennifer Stock: Wow. What a treat to hear those stories. I think we're going to have to bring Ray in another time to hear some more stories. He said as he was leaving, "You should have asked me about when I've been in danger." He's had some experiences with animals chasing him, I take it. So, on the line here, we're going to switch gears and talk about living things and learning about living things. We have Michelle Hester from Oikonos Ecosystem Knowledge, which is a nonprofit that is a collaborative of marine scientists. Michelle, welcome! You're on the air.

Michelle Hester: Hi, Jenny! Thanks...

Jennifer Stock: Thanks for waiting.

Michelle Hester: ...for having me. Yeah.

Jennifer Stock: So, can you just give us a little background on the Oikonos Ecosystem Knowledge Group. What is this organization all about?

Michelle Hester: Sure. Like you say, we're a nonprofit organization and we're working internationally to gain knowledge about marine and terrestrial ecosystems and our goal is to share that knowledge in creative ways and so, we're hoping to serve the public by just improving our collective relationship with the natural world and part of our success is definitely by surrounding ourselves with smart and creative people so we have lots of partners and collaborators and volunteers on most of our projects.

Jennifer Stock: Wonderful. How did you get the word Oikonos? That has an aquatic meaning to it. What's the background on the word Oikonos?

Michelle Hester: It's actually a made up word that combines Latin and Greek roots for home and learning. So, Oikos, which literally means home, but has come to mean our natural environment or our ecology and then Nosis, which means knowledge. So, Oikonos actually combined means ecosystem knowledge.

Jennifer Stock: Oh, that's true.

Michelle Hester: So, we had a little fun with naming it.

Jennifer Stock: That's cool. So, recently you've been here down our way and doing a project with the Cordell Bank Sanctuary and we're very happy to be a part of this for the last few years and I just wanted to get some background on it. What's the albatross tagging project all about?

Michelle Hester: Yes, I'm happy to tell you about the albatross. Well, this is the third season where we have been trekking out to Cordell Bank, beautiful bank, and the goal is to track this one species of albatross called the black-footed albatross and try and understand their migration during the period that we call post-breeding. So, it's this time of their lives when they leave their chicks and leave their breeding colony and they have the ability to roam great distances around the whole north Pacific, but many come to Cordell Bank and we know that from lots of the information from boat surveys and from people that just spend time out there that Cordell Bank is this place in the summer where hundreds and hundreds of black-footed albatross can come and aggregate.

So, the point of the research is to use this hot spot as a focal point and then track individual birds from Cordell Bank and see where they go and also try and understand what environmental factors can influence where they choose to go, where they choose to feed, when they leave, and so that's the beauty of satellite tracking. You can actually follow individuals and we can't do that in a boat because these birds can surpass our ability to travel by many orders of magnitude. So, being able to track them with the satellites is a great advance.

Jennifer Stock: So, you're also using other satellite data, I take it, for learning about some of the other conditions of the ocean that they're travelling to.

Michelle Hester: Right. There's what they call a remote sensing data that's now in a large-scale. You can look at wind patterns. That's a big one for albatrosses, their huge wings is how they use the wind. So, we can use satellite data to look at wind locally in our area and then also across the whole north Pacific and then sea surface temperature, things that might influence food like chlorophyll, the amount of chlorophyll in the ocean. So, those are the types of environmental factors that we can look at to understand where they're going and why.

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- Jennifer Stock:* Great. So, in the past few years, since this is the third year, what are some of the things that the group has learned about the bird?
- Michelle Hester:* Well, in the first few years we know that California is an important place for them, but actually, the birds that visit Cordell, after they leave Cordell they actually spend the majority of their time outside of U.S. waters. So, that was sort of an important thing to learn is that we can do some conservation work here, but to really protect the species there need to be international collaboration and so, the U.S. waters are protected within 200 nautical miles for some fishing regulations and other things, but they spent the majority of their time outside of this area.
- So, there's sort of a...it's important for packed lanes and other conservation issues is to know who to bring to the table and it's really powerful to be able to show maps to an international audience and for them to actually look and see how much time these birds spend in their waters versus the high seas. So, that was an important finding.
- Jennifer Stock:* So, why the black-footed albatross too? What's the significance of this species that is important to study about them. Why are we so curious about black-footed albatross as opposed to other birds?
- Michelle Hester:* Well, all the albatrosses are interesting and black-footed albatrosses are the species that are seen most at Cordell Bank and so, we wanted to tie together our interests in California coasts and a lot of our collaborators from BIC University and Moss Landing are already interested in working on the California coast. So, that was one reason the species sort of fits in with what we're trying to learn and it's also...some of the conservation concerns include the amount of plastic that they're eating in the ocean and now that we know that they spend so much time on the high seas there's lots of long-line fishing and albatross can get killed in long-line fishing because they're really attracted to the bait and there's methods that can prevent that, but some of the methods aren't being used across the whole international fleet.
- So, the two issues that satellite tracking can help answer with this species in particular, black-footed albatross.
- Jennifer Stock:* So, I would take it those same ill-effects that black-footed albatross are really, it's representative of other seabirds that are suffering from the same problems out there on the international seas.

Michelle Hester: Yeah. I mean, we'll always have a little different behaviors and different, you know, strategies so the threats aren't all the same, but certainly seem caught as bycatch and in many different fisheries is the problem that the birds that feed at the surface phase, like albatross feed at the surface, and so, they're getting caught in the operations that are happening just right at the surface, but then there's other seabirds that actually getting bait in hooks that are able to dive very, very deep. Some seabirds can dive all the way to the bottom.

So, there's some, you know, differences, but there's a lot of methods that can prevent bycatch and that's...a lot of work in Alaska and other places has really improved this and now the next step, I think, in international conservation is applying these methods that we know work to prevent this.

Jennifer Stock: That's great. That's important for that information to be applied. So, it's pretty fun. I'm a subscriber to the...watch an albatross every day and I think...can you share with the listeners how the public can follow along and watch these birds since they're been tagged?

Michelle Hester: Yes, yes. So, they've been flying around with satellite tags on for two weeks and you can go to a website that everyday their locations are updated. So, you can follow these birds around. There's ten birds right now and there's actually a link on the Cordell Bank website. So, if you want to just go to Cordell Bank's homepage or you can go to oikonos.org and go to the albatross project webpage and it will link you to this great portal called seaturtle.org and it's not just turtles. So, don't think that you hit the wrong link, but seaturtle.org is the host of all of these great maps. You can subscribe you said, Jenny? Are you getting email updates?

Jennifer Stock: Yeah. On the seaturtle.org you first have to let the people know...or you have to accept the conditions that you're there to just watch, you're not going to use the data, and you just say, "I accept," and then it tells you all about the project and you can subscribe to receive an email every day and it's been so great because I'll get an email and I'm so excited to get it to see where each of the birds have moved and I know this one bird has moved all the way up the Sonoma Coast already within a few days, actually. It seemed to go north and I guess it's continued up north? I haven't followed that one specifically.

Michelle Hester: Yeah. Right now a lot of the birds were hanging around Cordell Bank for longer than they expected, actually. There was super-high

winds for the week after we tagged, but they stayed in the area and one bird, Lucas, has actually gone south to Mexico and Cordell has gone north and you have to log in to see the other birds.

Jennifer Stock: That's great.

Michelle Hester: And you can also adopt these animals as a way to donate to both this project and what sea turtle is trying to do from that link.

Jennifer Stock: That's great. So, let me just restate the two websites you can go to for tracking these animals. You can go to oikonos.org, which is O-I-K-O-N-O-S dot org and you can also link to the Oikonos website through the Cordell Bank website, C-O-R-D-E-L-L-B-A-N-K dot NOAA, N-O-A-A dot gov. Well, Michelle, I'm sorry we're going to cut you off. We're getting just to the end of the hour, but thank you for calling in and telling us about the albatrosses and their movements. I hope that the information carries to do some better conservation movements in the next few years for these birds.

Michelle Hester: Yes, thank you, Jenny. This was great.

Jennifer Stock: Excellent. Take care. So, we're just wrapping up the end of the hour here. This has been Ocean Currents and earlier we were talking with Ray Bandar, a skull collector and Beth Cataldo who has captured his life and his art so well in her film, "A Life with Skulls" and we were just talking with Michelle Hester from Oikonos Ecosystem Knowledge and hearing about the albatrosses that are being tracked around the Pacific waters right now. Please log on. Take a look. It's pretty exciting to watch where these birds are and some of them are hanging around locally.

Just from my time offshore in the last month, I've noticed a lot of albatrosses this year. It's been really exciting. Thank you so much for tuning in today to Ocean Currents. We're just about to wrap it up and up next will be the rebroadcast of the West Marin Report, followed by Will Miner with Foggy Ridge Music. Next month in August, August 23rd is the next show and unfortunately I will be out of the country, but I have pre-recorded a show for you and you'll be hearing excerpts from some of our research cruises and it's a pretty cool way to hear what goes on out there, a kind of behind-the-scenes look. So, thanks again for tuning in. Have a great night and stay tuned for the West Marin Report.